FY-2008-2009 SCOPE OF WORK for: **Project #:__C-6 BAESER___**

Rearing razorback sucker in a floodplain on the Ouray National Wildlife Refuge

Lead Agency: U.S. Fish and Wildlife Service
Jointly Submitted by: Ouray National Wildlife Refuge, Colorado River Fish Project, and Ouray National Fish Hatchery

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Category:
_ Ongoing project
_ Ongoing-revised project
X Requested new project
__ Unsolicited proposal

Expected Funding Source:
X Annual funds
_ Capital funds
_Other (explain)

I. Title of Proposal:

Rearing razorback sucker in a floodplain on the Ouray National Wildlife Refuge
Revised January 14, 2008.

II. Relationship to RIPRAP:
Green River Action Plan: Mainstem
IV.A. Augment or restore populations as needed.
IV.A.1. Develop state stocking plan for the four endangered fishes of the Green River.
IV.A.1.c. Implement plan.

III. Study Background/Rationale and Hypotheses:

While razorback sucker stocking in the Colorado River Basin to increase existing populations has seen limited success in the San Juan Program, the history of razorback sucker augmentation has been benign at best (Minkley et al. 1991, Mueller 2003). Success of augmentation is probably a factor of environmental challenges and its interaction with the fitness of the fish introduced. Given the assumption that genetics and health are equal, acclimation may be an important factor affecting survival of razorback sucker stocked into Upper Colorado River Basin rivers. Wiley et al. (1993) suggested that greater post-stocking survival of trout would occur if hatchery fish were exposed to quasi-natural stream conditions and fed natural food prior to stocking. Use of wild or naturally acclimated individuals is a practice used in reintroducing rare wildlife species (Griffiths et al. 1989). Mueller (2003) stated that physical and behavioral stress associated with the transition from a strictly controlled environment to the challenges of a natural environment demands time and tremendous energy reserves. In fact, acclimated razorback sucker moved shorter distances that non-acclimated fish (i.e., appeared more oriented to the environment) after stocking in the Colorado River basin (Mueller and Foster 1999).

Most would agree that rearing fish in a natural environment, feeding on a natural diet and learning to avoid natural predators would provide a much better orientation to the challenges of a natural environment than fish reared in circular tanks on an artificial diet which are not only insulated from natural processes (Wiley et al. 1993), but are subjected to the shock of immediately switching from a hatchery tank to a natural environment. However, in order to meet stocking goals the production of fish in intensive culture provides a more consistent product and therefore is a better programmatic fit than the unpredictable returns from floodplain rearing. To date the consideration of using floodplain wetlands as rearing sites has not been considered viable because the relatively low return rate and unpredictable survival rates. In addition, during the recent drought few floodplains in the Green River have retained sufficient water to over-winter fish that need at least two growing seasons before they are able to survive in the mainstem river. However, the ability to maintain favorable water level, and remove non-native fishes from Baeser Bend floodplain increases the possibility of successful rearing and acclimation.

This proposal also addresses the preparation of Baeser Bend to provide acclimation for hatchery produced razorback sucker and bonytail (Task 1a). The modifications in this floodplain will provide a site that fish can be reared, acclimated and prepared for life in the river in most years in the absence of nonnative fish predation and competition. The modifications to the physical structure of the floodplain will provide several management options which will allow enhancement of stocked fish survival during both low and high flow years.

IV. Study Goals, Objectives, End Product:

Goal: Maximize management options of Baeser Bend floodplain for acclimation of razorback sucker and bonytail

Objectives:

1. Fill the breach in the middle of the floodplain levee.

2. Create an earthen pumping ramp on the floodplain levee that will allow filling and draining of the floodplain

3. Bulldoze access to the pumping station to allow mobilization of pump and tractor to fill and drain the floodplain.

End Product: A 40-acre floodplain for fish acclimation that has maximum management flexibility.

Goal: Rear large numbers of razorback sucker and bonytail in a managed floodplain for stocking into the Green River.

Objective 1. Acclimate age-0 and age-1 razorback sucker and bonytail to natural conditions in Baeser Bend floodplain.

Objective 2. Harvest surviving razorback sucker and bonytail from Baeser Bend floodplain in excess of 300 mm and release them into the Green River.

End Product: Production of razorback sucker in excess of 300 mm and bonytail in excess of 200 mm that can be released into the Green River.

V. Study area:

All work will be conducted within Baeser Bend floodplain, with fish eventually being released into the Green River.

VI. Study Methods/Approach:

Heavy equipment will be used to form the pumping station, access to the pumping station, and filling of the breach. The pumping station will be located at the current site of the breach to utilize the greatest distance of the breach to the dike as a drainage trench (i.e., allow pumping of water out of the floodplain when needed). The access to the pumping site will be along the upstream side of the levee because it will not require the removal of cottonwood vegetation and should be less costly. The access road will connect existing roads to the pump site and allow delivery and removal of the pumps. The pumping site will be located at the levee removal site and will consist of a ramp that will allow pumping of water from the river into the floodplain and a second ramp to allow pumping from the flood plain into the river. After completion of this project, Baser Bend will have the dike restored to its' previous height and reduce frequency of its connection to the river, thereby reducing the frequency of nonnative fish contamination.

Baeser Bend floodplain will be reset prior to spring of 2008. As flood waters rise in the

Green River in April, river water will be pumped into the floodplain with two 6" trash pumps to a minimum of 3.5 feet deep. After a minimum of two weeks after filling, the floodplain will be stocked with 40,000 razorback sucker larvae and a yet-to-be-determined (less than 250/acre) number of age-1 razorback sucker from Ouray National Fish Hatchery. When available a yet-to-be-determined number (less than 250/acre) of bonytail from Wahweap State Fish will also be stocked into Baeser Bend floodplain. Water will be pumped at least once during the summer to maintain adequate depth and, if acceptable numbers of endangered fishes are present, again in the fall to facilitate over-winter survival.

Vernal CRFP staff will set 5 fyke nets during a single 24 hr period in Baeser Bend floodplain in September 2008 to determine relative abundance of razorback sucker and bonytail. Each month following stocking, water depth and a 24 hr dissolved oxygen profile will measured. An assessment of the relative abundance will be submitted to the Biology Committee in the form of an annual report. If sufficient numbers of razorback sucker survive into the fall and over-winter in the floodplain, a contingency plan will be selected by the Biology Committee that will include either leaving the fish in the floodplain for a second year of growth or salvaging the remaining fish. If salvage is required, it will be conducted according to the requests of the Biology Committee and in accordance with the The salvage project will involve draining the water volume of the floodplain to facilitate capture with fyke nets, tagging fish and releasing them into the Green River.

VII. Task Description and Schedule:

Task 1:
a. Provide access to pump site, establish pump site and fill in the lower end of the existing floodplain levee breach.
b. Fill Baeser Bend floodplain with water using pumped river water.
Task 2: Stock age-0 razorback sucker and bonytail into Baeser Bend floodplain.
Task 3: Monitor water quality parameters monthly.
Task 4: Determine relative abundance of razorback sucker and bonytail.

Schedule: FY-2008 (Tasks 1-4)

Task	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1						X	X					
2							X					
3							X	X	X	X	X	X
4												X

VIII. FY-2008 Work (Tasks 1-3): Stocking, delivery of water, sampling, sample processing, and annual reporting:
– Deliverables/Due Dates: Annual Report of FY08 field activities due to PD's office November 2008.

– Budget:

Task 1a

Task	Work days	Cost
Labor		
Equipment operator	10	2,700
Equipment and Fuel		
Excavator	4	2,000
Bulldozer	5	1,500
Semi & trailer	1	800
Subtotal		**$7,000**

Task 1b. Fill Baeser Bend with water in the spring, and augment in the summer and fall. Estimated water volume is 120 ac ft in the spring, 60 ac ft in the summer and 80 ac ft in the fall if needed.

Operational Costs	Cost
Pumping Contract (Bid for 28 days of pumping)	$15,000
Contingency	$ 2,000
Subtotal	**$17,000**

Task 2. No cost (fish production costs are covered in propagation scopes and no charge is requested for stocking fish).

Task 3.

Labor	Cost
GS-8 Fisheries Tech ($30.66/hr x 8 hrs/day x14 days)	$3,400
Subtotal	**$3,400**
Operational Costs	Cost
GSA Truck rental ($300/month for 2 mos.)	**$600**

Task 4.
Determine relative abundance of razorback sucker and bonytail.

Labor	
GS-13 Biologist ($60.60/hr x 8 hrs/day x 2 days)	$970
GS-8 Fisheries Tech ($30.66/hr x 8 hrs/day x 2 days)	$490
3 GS-5 Tech ($18.52/hr x 8 hrs/day x 1 day)	$450
Subtotal	**$1,910**

IX. Budget Summary:

FY-2008 $29,910
Total: $29,910

X. Reviewers:
None

XI. References:

Griffiths, B., J.M. Scott, J.W. Carpenter, and C. Reed. 1989. Translocation as a species conservation tool, status, and strategy. Science Vol. 245: 477-480.

Minckley, W.L., P.C. Marsh, J.E. Brooks, J.E. Johnson, and B.L. Jensen. 1991. Management toward recovery of the razorback sucker. Chapter 17 in W.L. Minckley and J.E. Deacon eds., Battle against extinction: Native fish management in the American west. University of Arizona Press, Tucson, AZ.

Mueller, G., and D.K. Foster. 1999. A case for acclimation in the reintroduction of the endangered razorback sucker (Xyrauchen texanus): USGS Open-File Report 99-110. Denver, CO.

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Wiley, R.W., R.A. Whaley, J.B.Satake, M. Fowden. 1993. Assesment of stocking hatchery trout: a Wyoming Perspective. North American Journal of Fisheries Management 13:160-170.